

REMARKS/ARGUMENTS

Claims 10 – 24 are pending in the application.

A new independent claim 21 and new dependent claims 22 - 24 have been added.

In the Office Action, claims 10 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,990,887 to Lee in view of U.S. Patent No. 6,133,852 to Tonkin. Also, in the Office Action, claims 15 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,990,887 to Lee in view of U.S. Patent No. 6,133,852 to Tonkin as applied to claim 10 and further in view of U.S. Patent No. 5,172,095 to Scott '095. Furthermore, in the Office Action, claims 18 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,133,852 to Tonkin in view of U.S. Patent No. 4,990,887 to Lee.

The Applicant notes with appreciation the indicated allowability of claim 20, if rewritten in independent form to include the limitations of the base claim and any intervening claims.

With regard to the substantive rejections of the claims under 35 U.S.C. 103(a), the Applicant respectfully disagrees that the cited references render obvious the subject matter of the present invention as defined in claims 10 -19. Also, the Applicant submits that new independent claim 21 submitted herewith, and new dependent claims 22 - 24 submitted herewith, patentably define over the prior art of record and are allowable.

Independent claim 10 of the present application defines a method for warning a following vehicle when a vehicle in front applies its brakes. The method of the present

invention includes the steps of a) causing at least one brake light of the leading vehicle to illuminate during a braking process, as a braking value of the braking process increases, in conformity with a present value of the braking value and b) causing illumination to last for a retention time that is a function of the braking process in conformity with a maximum value of the braking value after the braking value drops below the maximum value.

Lee '887 discloses a braking system in which the brake lights are illuminated with an intensity for a set time period that may be plus or minus eight seconds.

Tonkin '852 discloses an array of lamps at the rear of a (leading) vehicle to provide an indication of the state of motion of the leading vehicle to the driver of a following vehicle. The array of lights 10 to 17 are lit in pairs from the center pair 10 and 11 out to outer pair 16 and 17 during a progressive brake warning (PBW) display. As the leading vehicle slows, the deceleration is indicated by the number of lights that are lit. Gentle deceleration causes the illumination of lights 10 and 11, while slightly harder braking and therefore greater deceleration causes lights 12 and 13 to be illuminated in addition to lights 10 and 11. Firm retardation of the leading vehicle caused, for example, by firm depression of a brake pedal, is detected by the vehicle display system 1 and causes further lights to be actuated.

Scott '095 discloses an alert system 20 connected to the conventional brake light system of a vehicle and comprising an auxiliary brake light 26 and a deceleration signal light 28 both controlled by a timer control module. Whenever a brake pedal switch 18 is closed, power is supplied to the control circuit 20 causing the auxiliary brake lamp 26 to

illuminate and a timer module 50 generates a pulse signal at node 42 which causes the lamp 26 to flash "on" and "off" intermittently. The timer module 50 will continue to produce a pulse signal for a fixed period after the brake is released and, as a result, the deceleration lamp 28 will continue to flash intermittently 4 to 6 seconds after the brake pedal is released. A separate deceleration signal, independent of the brake signal and derived from numerous sources, such as an accelerometer, a manifold pressure detector for detecting a drop in the intake manifold pressure, a means for detecting alternator output frequency or ignition firing frequency, or a means to detect a decrease in tachometer voltage, can be optionally applied to the circuit such that the deceleration lamp 28 will remain on and flash intermittently as long as the deceleration signal is present and for a predetermined period thereafter.

The Applicant respectfully submits there is no teaching or suggestion in Lee '887, Tonkin '852, or Scott '095, either as individual references or combined with one another, with respect to the method recited in claim 10 of the present application. For example, it is clear that none of the three applied references teach or suggest the step of the method recited in claim 10 of the present application of causing illumination of the brake light of the leading vehicle to last for a retention time that is a function of the braking process in conformity with a maximum value of the braking value after the braking value drops below the maximum value. Firstly, none of the three applied references teaches or suggests, as recited in claim 10 of the present application, "a retention time that is a function of the braking process in conformity with a maximum value of the braking value...". Lee '887 discloses that the brake lights are illuminated for a set time period

which may be plus or minus eight seconds; this invariable set time period self-evidently is not "a function of the braking process in conformity with a maximum value of the braking value" in that the maximum value of the braking value individually varies with respect to each braking process while, in contrast, a set time period of illumination as disclosed in Lee '887 is the opposite of a variable time period of brake light illumination.

Tonkin '852 discloses providing an indication that the leading vehicle is stationary by maintaining the outer pair of lights 16 and 17 in a continuously lit mode (see Column 6, lines 28 – 46 of Tonkin '852). The illumination of these outer pair of lights 16 and 17 can be terminated in response to an indication by a vehicle motion detector that the leading vehicle is moving. Thus, it can be seen that the Tonkin '852 brake light illumination arrangement in no way takes into account or considers the "maximum value of the braking value" with respect to its determination of the duration of the brake light illumination.

Scott '095 discloses optionally providing a deceleration signal independent of the brake signal and linked, via, for example, an accelerometer or a detector, to a vehicle operating parameter, whereupon a deceleration lamp 28 will remain on and flashing until after a predetermined cut off period that follows the end of the vehicle deceleration. Accordingly, it can be seen that Scott '095 likewise does not take into account or consider the "maximum value of the braking value" with respect to its determination of the duration of the brake light illumination.

Moreover, even if there were some hint or suggestion in any of the three applied references to take into account the "maximum value of the braking value" with respect

to a determination of the duration of the brake light illumination, which the Applicant submits there is not, none of the three applied references teach or suggest, in the language of claim 10 of the present application, "causing illumination of the brake light of the leading vehicle to last for a retention time ... after the braking value drops below the maximum value". Accordingly, it is submitted that the method of warning a following vehicle recited in claim 10 of the present application is neither taught nor suggested by Lee '887, Tonkin '852, or Scott '095, either alone or in combination with one another.

It is additionally submitted that the various rejections under 35 U.S.C. 103(a) of claims 11 – 17, each of which ultimately depend from claim 10, also cannot be sustained in view of the absence, as noted hereinabove, of any teaching or suggestion in the applied references of the method recited in claim 10. For example, claim 11 of the present application recites the further step of "causing said illumination to fade, after conclusion of said retention time, during a period of time that is a function of said braking process" and this claim is rejected as unpatentable over Lee '887 in view of Tonkin '852 for the reason that Lee '887 discloses that its brake light (38) will remain illuminated as long as 8 seconds after a depression of the brake switch is ceased, whereupon the Office Action asserts that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to know that the illumination of the brake light fades out indicating to the following vehicles that the leading vehicle is in an acceleration state. The Applicant does not dispute that Lee '887 discloses that its brake light (38) "fades out" [specifically, the brake light (38) ceases after the lapse of the set time period of 8 seconds]. Instead, the Applicant points out that claim 11 of the

present application adds to the method recited in claim 10 the further step of causing the illumination of the brake light of the leading vehicle to fade; consequently, the method recited in claim 11 of the present application still requires the steps a) and b) recited in claim 10 and, as noted, none of the applied references teach or disclose the method of claim 10. Accordingly, to the extent that the rejections of claims 11 – 17 are based upon assertions that the respective additional features recited in these claims are taught in the applied references, the Applicant notes that the Office Action fails to explain how it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include such features in a method not known or obvious to a person of ordinary skill in the art (namely, the method recited in claim 10 of the present application).

With regard to the rejection of claims 18 and 19 as obvious over Tonkin '852 in view of Lee '887, the Office Action asserts that Tonkin '852 discloses the apparatus recited in claim 18 except for the feature of the illumination of the brake light lasting for a retention time that is a function of the braking process in conformity with a maximum value of the braking value after the braking value drops below the maximum value. The Office Action further asserts that Lee '887 discloses a digital delay time (45) for controlling a brake light (38) to illuminate for a retention time. However, as the Applicant has pointed out above, Lee '887 does not teach or disclose controlling its brake light (38) to illuminate for a retention time "that is a function of the braking process in conformity with a maximum value of the braking value...". Thus, it is submitted that even if there were some motivation for one of ordinary skill in the art to combine the

Tonkin '852 and Lee '887 references, neither the Tonkin '852 reference nor the Lee '887 reference teach or disclose the respective feature of controlling the illumination of the brake light for a retention time that is a function of the braking process in conformity with a maximum value of the braking value.

Accordingly, it is submitted that the method of the present invention as recited in claim 10 and in claims 11 - 17, which each ultimately depend from claim 10, is neither taught nor suggested by the prior art of record and, additionally, it is submitted that the apparatus of the present invention as recited in claim 18 and claim 19 depending therefrom is also neither taught nor suggested by the prior art of record. Reconsideration of the rejections of claims 11 – 19 under 35 USC Section 103(a) is therefore respectfully requested.

New independent claim 21, submitted herewith, recites a method of warning a following vehicle that a vehicle in front, a leading vehicle, has applied its brakes, wherein the inventive method includes, in connection with each respective discrete application of the brakes of the leading vehicle during a braking process that results in a deceleration of the leading vehicle, the step of illuminating a brake light during a retention period of illumination such that the brake light displays a retention period visual format which is correspondingly indicative of the actual maximum rate of deceleration of the leading vehicle during the braking process. The inventive method recited in new independent claim 21 further includes the step of changing the retention period visual format of the brake light to a different visual format during a fading period of illumination that commences at the end of the retention period of illumination. As a

result of changing the retention period visual format of the brake light to a different visual format, the brake light continues to be illuminated but has a different illuminated appearance during the fading period of illumination than its illuminated appearance during the retention period of illumination. Additionally, the fading period of illumination has a prescribed blackout time at which the illumination of the brake light will cease.

Furthermore, the inventive method recited in new independent claim 21 includes the step of alternatively (1) ceasing the illumination of the brake light at the prescribed blackout time or (2) delaying the time at which the illumination of the brake light will cease to a later blackout time. The step of alternatively ceasing or delaying the ceasing of the illumination of the brake light is based upon a determined time at which the leading vehicle will come to a complete stop. In accordance with this step of the inventive method, the illumination of the brake light will cease at the prescribed blackout time in the event that the prescribed blackout time is not earlier than the determined time at which the leading vehicle will come to a complete stop or, alternatively, the time at which the illumination of the brake light will cease is delayed to a later blackout time which is no earlier than the determined time at which the leading vehicle will come to a complete stop in the event that the prescribed blackout time is earlier than the determined time at which the leading vehicle will come to a complete stop. The inventive method of warning a following vehicle recited in new independent claim 21 thus advantageously ensures that the brake light remains illuminated until the leading vehicle comes to a complete stop even though the actual stopping time will vary as a function of the speed of the leading vehicle and the manner of application of its brakes.

The Applicant submits that none of the prior art of record teaches or discloses the method recited in claim 21 of warning a following vehicle that a leading vehicle has applied its brakes. For example, none of the prior art of record teaches or discloses a method as recited in claim 21 during which a brake light is illuminated for a retention period and then illuminated during a fading period of illumination having a prescribed blackout time at which the illumination of the brake light will cease, wherein, based upon a determined time at which the leading vehicle will come to a complete stop, the ceasing of the illumination of the brake light alternatively occurs at the prescribed blackout time or is delayed to a later blackout time.

The Applicant therefore submits that claims 10 – 24 are now in condition for allowance and early action toward that end is respectfully requested. However, should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to resolve any outstanding issues and expedite placement of the application into condition for allowance.

Respectfully Submitted,



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